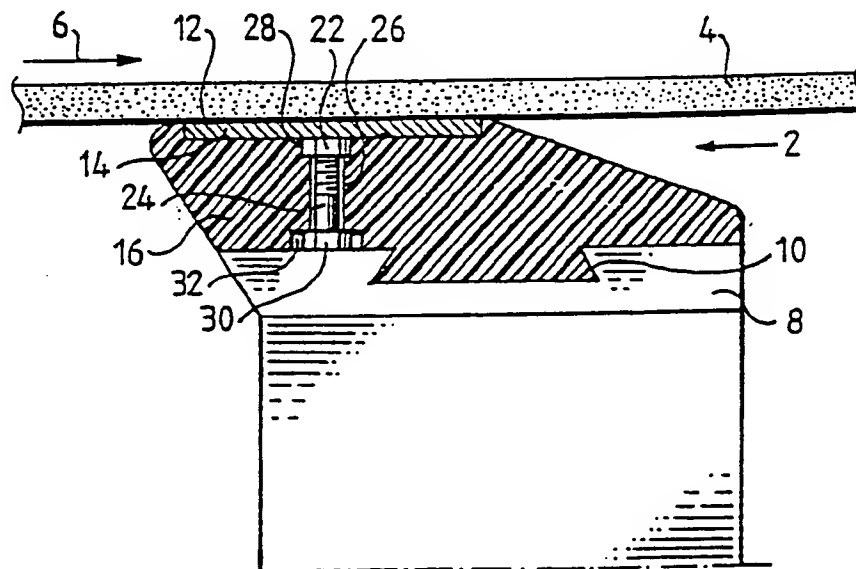




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: A FOIL FOR THE WIRE SECTION IN A PAPER MAKING MACHINE



(57) Abstract

The invention relates to a dewatering rail, a so-called foil (2), for the wire section in a paper making machine. More particularly said rail is of the kind being intended to be located transversely to the running direction (6) of the wire (4) with its upper surface in contact with the underside of the upper portion of the wire, said upper surface having a corrosion resistive, e.g. ceramic, layer (12) on a bed (14) of stainless steel or similar. The bed is a thin plate (14), which is supported by a longitudinal rigid supporting structure (16), which forms part of the foil.

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ED/HL 32541

A foil for the wire section in a paper making machine.5 Technical area.

The present invention relates to a dewatering rail, a so called foil, for the wire section in a paper making machine, said rail being intended to be applied transversely to the running direction of the wire with its upper surface in
10 contact with the underside of the upper portion of the wire, said upper surface having a corrosion resistive. e.g. ceramic, layer on a bed of stainless steel or the like.

Such a foil, also called register rail, is usually shaped with a somewhat convex upper surface such that during the
15 dewatering of the pulp transported on the wire a negative pressure is formed in a wedge shaped space between the upper surface and the wire.

State of the art.

20 The pulp contains strongly corroding components and in operation the foil is exposed to hard mechanical stresses, this making great demands for the design of the foil with respect to its resistibility against corrosion as well as its mechanical strength, if a reasonable service life is
25 desirable. Thus far, it has turned out in practice that this can only be attained against dramatically increased costs which is demonstrated by the three known main types of foil designs. These are:

1. Foils consisting entirely of plastic rails having a
30 service life of approximately two weeks and costing approximately 20.000 crowns per foil.

2. Foils of stainless steel rails having a ceramic layer on their upper surface. These foils cost approximately 45000 crowns and have a service life of approximately two years.

35 3. All-ceramic foils costing approximately 90000 crowns. Their service life is restricted by the fact that they have a tendency to crack, but it exceeds that of the foils according to paragraph 2.

The data given as an example for the three types of foils

are, of course, presupposed to apply under similar operational conditions for the respective foils.

Description of the invention.

5 The object of the invention has been to provide a foil of the kind defined by way of introduction, which has a service life of a couple of years, such as for the rail according to paragraph 2 above, but against considerably lower costs.

10 In accordance with the invention this object has turned out to be attainable, surprisingly enough, by the fact that the bed of stainless steel or similar is a thin plate supported by a longitudinal rigid supporting structure forming part of the foil.

15 Preferably, the supporting structure can be a plastic rail to which the plate is attached.

By such an embodiment of the invention the costs of the foil, under similar operational demands as above, have turned out to decrease to approximately 30000 crowns.

20 Description of the drawings.

The invention will now be descrailed more closely below with reference to the attached drawing, on which

Figure 1 in a transverse section illustrates a first embodiment of a foil according to the invention, and

25 Figure 2 in a similar transverse section illustrates a second embodiment.

Embodiments.

30 In the two Figures similar or similarly functioning details have attained the same reference designations.

35 In the Figures two examples are shown of a dewatering rail generally designated 2, a so called foil, for the wire section in a paper making machine. In a way well known to the man of the art the foil is applied transversely to the running direction, indicted by an arrow 6, of the upper wire section, designated 4. More particularly, the foil 2 is carried by a portion 8 of the frame, not further shown, of the wire section, attached in a conventional way to the portion 8 by means of a dovetail connection indicated at 10.

An upper surface layer 12 on the foil 2 is then in contact with the underside of the wire section 4. The layer 12, in a way likewise conventional, is a corrosion resistive, e.g. ceramic layer on a bed of stainless steel or similar, the design of which is described more in detail below.

In accordance with the invention this bed is a thin plate 14 supported by a longitudinal rigid supporting structure 16 forming part of the foil 2.

More particularly, in the embodiments shown, the supporting structure 16 is a plastic rail, the thickness of which is great as compared with that of the bed plate 14. In practice the thickness of the plate 14 can be e.g. 3 mm and that of the plastic rail 16 can be e.g. 25 mm.

In the embodiment according to Figure 1 the plate 14 is recessed in a correspondingly shaped recess in the upper side of the plastic rail 16, whereas in the embodiment according to Figure 2 the plate 14 is supported along its longitudinal edges by the plastic rail 16. More particularly, in the last-mentioned case, the longitudinal edges of the plate 14 are bent inwardly under the plate for forming supporting edge portions 18 and 20, respectively, the upper side of the plate 14 being simultaneously bent to a desired shape known per se.

In both embodiments the plate 12 (Figure 1) and its edge portions 18, 20 (Figure 2), respectively, are attached to the plastic rail 16 by means of screwed joints. The screwed joints include nuts 22, which are welded onto the underside of and along the plate 12 between its edges (Figure 1), and on the underside of and along the edge portions 18, 20 (Figure 2), respectively. Screws 24 cooperating with the nuts 22 extend through through holes 26 in the plastic rail 16. The nuts 24 are located in recesses 28 in the upper side of the plastic rail 16 and the heads 30 of the screws 24 in a similar way are located in recesses 32 in the underside of the plastic rail 16.

Within the scope of the invention, other embodiments of the supporting structure shown in the Figures as a plastic rail 16 are conceivable. Essential is to use the basic idea of the invention to make the design of the supporting structure as cheap as possible. This can e.g. be obtained by

means of a suitable choice of material, such as of the plastic rail 16, and/or by means of a design where a material, which may be expensive per se, is used in an optimal way from the point of view of price. As a possible
5 example of the latter alternative an embodiment similar to that in Figure 2 can be mentioned wherein, however, the plastic rail 16 is replaced by a plate bent with folded over longitudinal edges in a similar way as the plate 14, the contours of which for the rest e.g. can follow the contours
10 of the underside and the edge portions of the plastic rail 16 in Figure 2. The plate 14 and the supporting structure plate, thus shaped, can then be attached together with their bent over longitudinal edges abutting each other.

Claims.

1. A dewatering rail, a so called foil (2), for the wire section in a paper making machine, said rail being intended to be located transversely to the running direction (6) of the wire (4) with its upper surface in contact with the underside of the upper portion of the wire, said upper surface having a corrosion resistive, e.g. ceramic layer (12) on a bed (14) of stainless steel or similar, characterized in that said bed is a thin plate (14), which is supported by a longitudinal rigid supporting structure (16), which forms part of the foil.

2. A dewatering rail according to claim 1, characterized in that the supporting structure (16) is made by plastics.

3. A dewatering rail according to claim 2, characterized in that the supporting structure is a plastic rail (16), the thickness of which is great as compared with that of the bed plate (14).

4. A dewatering rail according to any of the preceding claims, characterized in that the plate (14) is recessed in the side of the supporting structure (16) facing the plate (Figure 1).

5. A dewatering rail according to any of the preceding claims, characterized in that the plate (14) is supported along its longitudinal edges (18,20) by the supporting structure (16).

6. A dewatering rail according to any of the preceding claims, characterized in that the longitudinal edges (18,20) of the plate (14) are bent inwardly under the plate.

7. A dewatering rail according to any of the preceding claims, characterized in that the plate (14) is attached to the supporting structure (16) by means of attaching joints, such as screw joints (18-30) arranged between and/or along the longitudinal edges of the plate.

Fig. 1

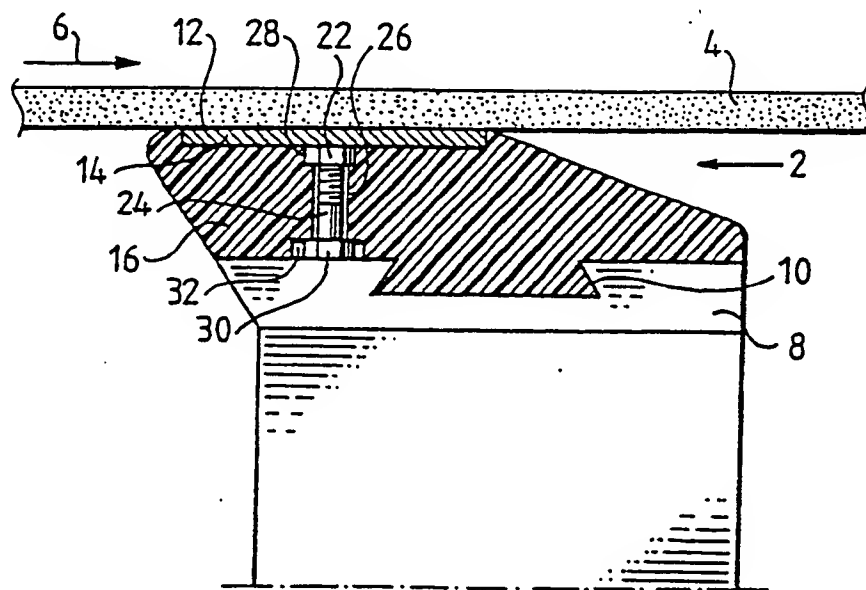
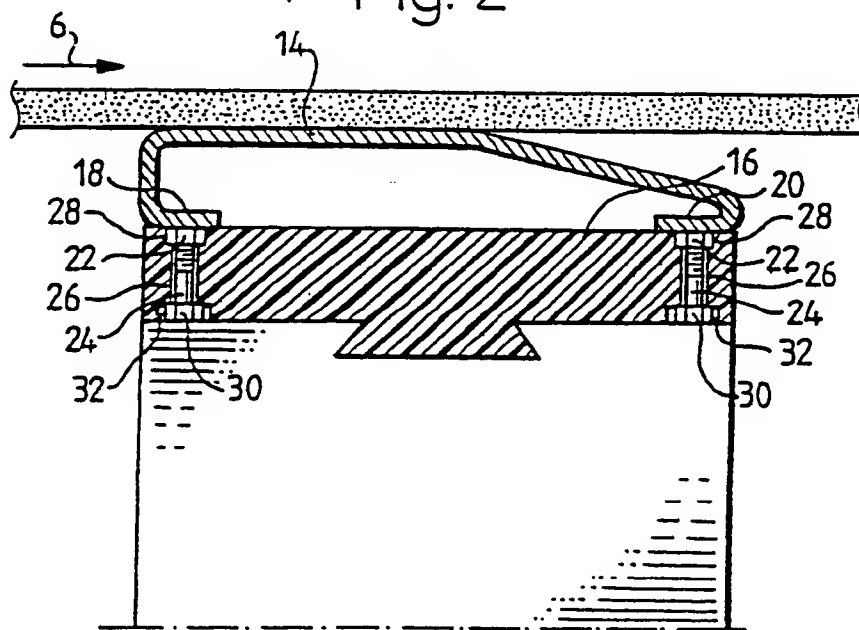


Fig. 2



INTERNATIONAL SEARCH REPORT

Internationet Application No PCT/SE 92/00437

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: D 21 F 1/48		
II. FIELDS SEARCHED		
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US, A, 3140225 (LESLIE TRUXA) 7 July 1964, see column 2, line 28 - line 29; column 2, line 25; column 2, line 11; column 2, line 22 - line 23; figure 2	1
A	--	2-7
A	US, A, 3520775 (LESLIE TRUXA) 14 July 1970, see column 3, line 28 - line 33; figure 4	1
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
22nd September 1992		25 -09- 1992
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ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.PCT/SE 92/00437

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file as of 28/08/92
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3140225	64-07-07	NONE	
US-A- 3520775	70-07-14	NONE	

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IC D21F001-48
TI LEISTE FÜR DIE NASSPARTIE EINER PAPIERMASCHINE.
A FOIL FOR THE WIRE SECTION IN A PAPER MAKING MACHINE.
FEUILLE METALLIQUE POUR LA TOILE SANS FIN D'UNE MACHINE A PAPIER.
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PA SJOEDIN, Sven-Eric, Dalkaerrsleden 37, S-162 24 Uaellingby, SE
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